



U. S. NAVAL SUBMARINE MEDICAL CENTER

Submarine Base, Groton, Conn.

MEMORANDUM REPORT 65-6

CURRENT PROBLEMS IN ENLISTED SUBMARINE PHYSICAL EXMINATIONS

by

Julio C. Rivera
LCDR MC USN

Bureau of Medicine and Surgery, Navy Department
Research Project MR005.14-2100-1.14

Released by:

C. L. Waite, CAPT MC USN
COMMANDING OFFICER
U.S. Naval Submarine Medical Center
12 May 1965



MEDICAL RESEARCH LABORATORY
U.S. NAVAL SUBMARINE MEDICAL CENTER
U.S. Naval Submarine Base, Groton, Conn.

CURRENT PROBLEMS IN ENLISTED SUBMARINE
PHYSICAL EXAMINATIONS

by
LCDR Julio C. Rivera, MC, U.S.Navy

MR005.14-2100-1.14

12 May 1965

Approved by:

A. Dalton James
CDR MC U.S.Navy
Director, School of Submarine Medicine

Approved by:

Walter R. Miles, Ph.D.
Scientific Director
Medical Research Lab.

Approved by:

Walter F. Mazzone
CAPT MSC, U.S.Navy
Director, Medical Research Lab. Dept.

Released by:

C. L. Waite
CAPT MC, U.S.Navy
Commanding Officer, SMC

SUMMARY PAGE

THE PROBLEM

To determine the current attrition rate for physical reasons in the Basic Enlisted Submarine School.

FINDINGS

In spite of the requirement that all candidates for the Basic Enlisted Submarine School be examined prior to reporting to the U.S. Naval Submarine Base-New London, re-examination at the Base revealed an increase in the percentage of rejections for physical reasons among these candidates. The increase was from seven per cent in 1960 to eleven per cent in 1964.

APPLICATION

The findings of this study should alert the responsible Naval authorities as to the time and money being wasted due to inadequate preliminary submarine physical examinations conducted prior to reporting to the Submarine Base.

ADMINISTRATIVE INFORMATION

This study was conducted as a part of Bureau of Medicine and Surgery Research Project MR005.14-2100-1, Selection Techniques Research, and has been designated as Report No.14 on that work unit. It was approved for publication as a Memorandum Report on 12 May 1965.

Published by the U.S. Naval Submarine Medical Center
FOR OFFICIAL USE

(May be released as of 1 July 1965)

CURRENT PROBLEMS IN ENLISTED SUBMARINE PHYSICAL EXAMINATIONS

By LCDR J. C. RIVERA, MC, USN*

INTRODUCTION

This report reflects the nature and scope of a continuing problem which the medical examining facility in the New London area has faced for many years. Briefly stated, the problem is that inadequate submarine physical screening examinations lead to wasted man days and money. While planning a study of the current attrition for all reasons in the Basic Enlisted Submarine course, it was found that there is an urgent need to alert all medical officers and examining ships and stations, via the proper channels, to the present situation.

Article 15-29, Manual of the Medical Department, requires that all candidates for Submarine School be examined prior to reporting to the Submarine Base. It also requires that all personnel reporting to the Submarine School shall again be given a complete submarine physical examination on arrival. The Enlisted Transfer Manual, Article 10.12e, requires that an applicant for initial submarine training must be qualified for submarine duty in accordance with Article 15-29, Manual of the Medical Department, at the time he forwards his request to the Bureau of Naval Personnel. In spite of all the above requirements, there has been an increase in the number of personnel reporting to the Basic Enlisted Submarine course who are not physically qualified in accordance with the current submarine physical standards.

BACKGROUND

In 1960, Ninow and Collins (1) reported that the number of rejections at the Submarine School for physical reasons was on the increase among candidates for the Basic Enlisted Submarine course. They analyzed the attrition rates for 31 classes of enlisted men (Classes 175-206, including 6095 men, March 1959 - August 1960).

It was shown that 983 men (about 16%) were dropped from these classes for four reasons: (a) physical; (b) academic; (c) non-volunteer, and (d) others. The attrition data for all drops (16%) were further analyzed in order to focus upon those men disqualified for physical reasons only. The average attrition rate, of all drops, for physical reasons in the first 15 classes was 5%, and in the next 16 classes it was 7%, a rise of 2%. Table 1 lists the physical reasons for drops in Classes 191 - 206 (3715 men).

* Assistant Director, School of Submarine Medicine, and Head, Physical Examination Branch, U. S. Naval Submarine Medical Center, U. S. Naval Submarine Base New London, Groton, Connecticut.

Another report (2) in 1961 analyzed the total number of submarine physical examinations conducted by the U. S. Naval Medical Research Laboratory during the calendar year 1960. Of 5998 examinations, 412 (about 7%) were found not to meet the current physical standards for submarine duty. The principal causes for rejection of candidates upon their arrival at the Submarine Base were: (a) defective visual acuity; (b) defective color vision; (c) psychologic unadaptability, and (d) pulmonary disease or disability. The following interesting facts were observed:

1. The 412 vacancies in the school quota were not filled. The attrition rate, for reasons other than physical, at the Submarine School at that time was about 9%. In substance, then, quota vacancies of 412 resulted in 375 fewer graduates. Four conventional submarines can be manned with this number.
2. The total cost of needlessly transporting these men to and from the Submarine Base amounted to approximately \$90,000.00.
3. In 75% of the cases the situation was avoidable.
4. Due attention to the matter of visual acuity and color perception on the part of medical officers conducting the preliminary physical examinations could have reduced the number of rejections from 412 to 142.

CURRENT DATA

A preliminary analysis was made of all enlisted submarine physical examinations conducted by the Submarine Medical Center on personnel reporting to Submarine School during the calendar year 1964. Of 6963 examinations 769 (11%) were found not to meet the current physical standards for submarine duty. The reasons for disqualifications are listed in Table 1.

The information in Table 2 was collected in an effort to find out the source of the physical drops. This information was obtained from a questionnaire completed at the time a subject was disqualified. (August-December 1964). The following questions were included:

1. Previous command?
2. Is there a preliminary submarine physical examination in the man's health record?
3. Was he found qualified by preliminary examination?

A sample of 200 physical disqualifications and questionnaires was reviewed. It is the impression of the examining staff that the sample of 200 is representative of the current trend. A study in 1965 will include all subjects reporting to Submarine School, and all physical drops from each command. The statistical limitations of Table 2 are well recognized.

DISCUSSION

Table 1 reveals an increase in physical drops per total enlisted men examined, from 7% in 1960 to 11% in 1964. The greatest number of persons was dropped because of defective visual acuity (32% in 1960 and 36% in 1964, of all physical drops). Almost all of these drops should have been detected at their previous duty stations, since they were gross visual defects. Some borderline and all waiverable cases were given a waiver and are not included in the drop figures. All color vision drops should have been detected by a properly administered Farnsworth Lantern test or one of the pseudo-isochromatic plate test sets.

Other defects that should have been detected during the preliminary physical examination are: auditory, dental, obesity, cardio-vascular, and gastro-intestinal. Some defects, such as respiratory, borderline obesity, skin, and the group listed as "others" require an opinion of the individual examining medical officer. This will lead to reasonable differences of opinion as to the man's qualification.

It is recognized that a general service medical officer cannot be expected to determine whether a candidate is psychologically adaptable for submarine duty. It is also recognized that Article 15-29 (a), Manual of the Medical Department, states that the psychiatric portion of the examination may be omitted if the services of a trained examiner are not available; however, most of the psychological drops came from the larger centers where this service is usually available. They should have been disqualified during their preliminary submarine physical examination. Most of the cases classified as "Escape Training Tank or pressure test failures" could have been screened psychologically or administratively at their previous command. The majority of them refused further tank or pressure training after one or more attempts to pass the test. Some admitted fear of water or confinement, poor motivation for submarine duty, or volunteering to obtain a transfer from a duty station. Others had a history of repeated disciplinary action or evidence of emotional instability or immaturity. Very few were dropped for purely medical reasons, e.g., inability to equalize pressure within the middle ear or sinuses.

Most of the physical drops in Table 2 came from the larger recruiting areas. This table also reveals a recurring problem: the large number of personnel reporting to Submarine School without a report of a preliminary submarine physical examination in their health records. Of the physical drops who did have a physical examination in their health record, almost all of them were found qualified by their previous command. In some cases the health records contained entries to the effect that the candidates were not qualified for submarine duty. In spite of this fact, they were ordered to Submarine School.

CONCLUSIONS

1. There has been an increase in the percentage of rejections for physical reasons among the candidates for the Basic Enlisted Submarine course.

TABLE 1
PERCENTAGE OF ENLISTED PHYSICAL DROPS

Disqualifying Defects	Jan-Aug 1960	Jan-Dec 1964
Visual Acuity	32.0*	36.3**
Tank/Pressure Failure	20.3	13.0
Psychiatric	15.0	25.5
Respiratory	14.0	3.0
Auditory	12.4	5.6
Color Vision	6.0	5.3
Dental	0.3	1.7
Obesity	-	4.6
Skin	-	1.5
Cardio-vascular	-	1.4
Gastro-intestinal	-	1.3
Other	-	0.3
TOTAL Number of Drops	266	769
TOTAL Number Examined	3715	6963
% Drops/Number Examined	7%	11%

*Does not include 60 waivers granted by the Bureau of Naval Personnel.

**Does not include 92 waivers granted locally in accordance with Article 10.12e, Enlisted Transfer Manual.

TABLE 2
SOURCE OF ENLISTED PHYSICAL DROPS AND CONDITION OF HEALTH RECORDS

Previous Commands	Number of Physical Drops	Preliminary Physical Exams <u>NOT</u> in Health Record	Preliminary Physical Exam Present in Health Record	Found Qualified in Preliminary Physical Exam
A	93	81	12	12
B	36	13	23	23
C	18	12	6	5
D	12	0	12	9
E	10	0	10	10
F	10	7	3	3
G	6	1	5	5
H	5	1	4	4
I	5	1	4	4
J	3	0	3	2
K	2	0	2	2
TOTAL	200	116	84	79

2. Due to inadequate preliminary submarine physical examinations during the calendar year 1964, the Navy was deprived of at least the equivalent number of six Polaris submarine crews or seven conventional submarine crews.

3. It is conservatively estimated that about \$167,000.00 was expended in transporting these men to and from the New London area.

4. The needless cost of transportation, loss of service, incomplete quota of classes and morale problems are obvious and in most cases avoidable.

RECOMMENDATIONS

1. Information regarding the necessity for accuracy, consequences of inadequate examinations, proper methods of examinations, use of proper equipment, and familiarity with current submarine physical standards should be disseminated and stressed.

2. The problem must be corrected at local commands. Advice should be sought by examining activities from the Bureau of Medicine and Surgery or the Submarine Medical Center.

3. Cooperation is requested not only from examining medical officers and hospital corpsmen, but from recruiters and personnel officers, especially at Naval Training Centers and Reserve Training Centers.

REFERENCES

1. Ninow, E. H., Collins, J. J.: Current Trends of Attrition in the Enlisted Basic Submarine School, USN Med. Res. Lab. Memo Report No. 60-9, November 1960.

2. U. S. Navy Medical News Letter, 37(5);30, 7 April 1961.

January 1965